

Apply and extend previous understandings of multiplication and division of whole numbers to divide fractions by fractions (Standards 6.NS.1)	
Standard 6.NS.1: Interpret and compute quotients of fractions.	
<p>a. Compute quotients of fractions by fractions, <i>for example, by applying strategies such as visual fraction models, equations, and the relationship between multiplication and division, to represent problems.</i></p> <p>b. Solve real-world problems involving division of fractions by fractions. <i>For example, how much chocolate will each person get if three people share $\frac{1}{2}$ pound of chocolate equally? How many $\frac{3}{4}$-cup servings are in $\frac{2}{3}$ of a cup of yogurt? How wide is a rectangular strip of land with length $\frac{3}{4}$ mile and area $\frac{1}{2}$ square mile?</i></p> <p>c. Explain the meaning of quotients in fraction division problems. <i>For example, create a story context for $(\frac{2}{3}) \div (\frac{3}{4})$ and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $(\frac{2}{3}) \div (\frac{3}{4}) = \frac{8}{9}$</i></p>	
Concepts and Skills to Master	
<ul style="list-style-type: none"> Model division of fractions with manipulatives, visual diagrams, and word problems. Interpret what the quotient represents in problems. 	
Related Standards: Current Course	Related Standards: Future Courses
6.EE.7	7.NS.2 , 7.NS.3 , computational skill used in coursework

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> Interpret whole-number quotients of whole numbers, partitive and quotative (3.OA.2) Understand division as an unknown-factor problem (3.OA.6) Interpret a fraction as division of the numerator by the denominator (5.NF.3) Solve real-world problems involving multiplication of fractions and mixed numbers (5.NF.6) Divide unit fractions by whole numbers and whole numbers by unit fractions (5.NF.7)
Academic Vocabulary
Quotient
Resources:
Curriculum Resources : https://www.uen.org/core/core.do?courseNum=5160#70012

Compute (add, subtract, multiply and divide) fluently with multi-digit numbers and decimals and find common factors and multiples (Standards 6.NS.2-4)	
Standard 6.NS.2: Fluently divide multi-digit numbers using the standard algorithm.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> Understand the role of place value when dividing multi-digit numbers. Fluently (flexibly, accurately, efficiently, and appropriately) divide multi-digit numbers. 	
Related Standards: Current Course	Related Standards: Future Courses
6.NS.3 , 6.EE.7	7.NS.2 , 7.NS.3 , III.A.APR.6 , III.A.APR.7 , computational skill used in coursework

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> Interpret whole-number quotients of whole numbers (3.OA.2) Apply properties of operations as strategies to multiply and divide (3.AO.5) Understand division as an unknown-factor problem (3.OA.6) Solve multi-step word problems in which remainders must be interpreted (4.OA.3) Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors (4.NBT.6) Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division (5.NBT.6)
Academic Vocabulary
Dividend, divisor, quotient
Resources:
Curriculum Resources : https://www.uen.org/core/core.do?courseNum=5160#70012

Compute (add, subtract, multiply and divide) fluently with multi-digit numbers and decimals and find common factors and multiples (Standards 6.NS.2-4)	
Standard 6.NS.3: Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> Understand the role of place value in the operations of addition, subtraction, multiplication and division. Fluently (flexibly, accurately, efficiently, and appropriately) add, subtract, multiply, and divide multi-digit decimals. 	
Related Standards: Current Course	Related Standards: Future Courses
6.NS.2 , 6.EE.7	7.NS.1 , 7.NS.2 , 7.NS.3 , I.F.BF.1b , II.F.BF.1b , III.F.BF.1b , III.A.APR.1 , III.A.APR.6 , III.A.APR.7 , computational skill used in coursework

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100 (4.NF.5) Use decimal notation for fractions with denominators 10 or 100 (4.NF.6) Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations (5.NBT.7)
Academic Vocabulary
Sum, difference, product, quotient
Resources:
Curriculum Resources : https://www.uen.org/core/core.do?courseNum=5160#70012

Compute (add, subtract, multiply and divide) fluently with multi-digit numbers and decimals and find common factors and multiples (Standards 6.NS.2-4)	
Standard 6.NS.4: Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. <i>For example, express $36 + 8$ as $4(9 + 2)$.</i>	
Concepts and Skills to Master	
<ul style="list-style-type: none"> • Understand that a factor is a whole number that divides without a remainder into another number. Find GCF for a given pair of numbers. • Understand that a multiple is a whole number that is a product of the whole number and any other factor. Find LCM for a given pair of numbers. • Use knowledge of common factors and common multiples to create equivalent expressions by factoring and distributing quantities. 	
Related Standards: Current Course	Related Standards: Future Courses
6.EE.3 , 6.EE.4	7.EE.2 , I.A.SSE.1 , II.A.SSE.2 , II.A.SSE.3 , III.A.APR.4

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> • Apply the distributive property as a strategy to multiply and divide. Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$ (3.OA.5) • Find all factor pairs for a whole number in the range 1-100 (4.OA.4) • Recognize that a whole number is a multiple of each of its factors (4.OA.4) • Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number (4.OA.4)
Academic Vocabulary
Factor, multiple, greatest common factor (GCF), least common multiple (LCM), distributive property
Resources:
Curriculum Resources : https://www.uen.org/core/core.do?courseNum=5160#70012

Apply and extend previous understandings of numbers to the system of rational numbers (Standards 6.NS.5-8)	
Standard 6.NS.5: Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (<i>for example, temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge</i>); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of zero in each situation.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> Discover that every negative integer is less than zero. Use integers to represent situations in real-world context. Understand the meaning of zero is determined by the context. 	
Related Standards: Current Course	Related Standards: Future Courses
6.NS.6 , 6.NS.7 , 6.NS.8 , 6.EE.8	7.NS.1 , 7.EE.3 , 7.EE.4 , 8.EE.7 , I.A.CED.1 , I.A.REI.1 , I.A.REI.3 , I.A.REI.5 , I.A.REI.6 , II.A.CED.1 , III.A.CED.1 , computational skill used in solving equations.

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> Count forward from a given number within the known sequence (K.CC.2) Represent whole numbers as lengths from 0 on a number line diagram (2.MD.6)
Academic Vocabulary
Integer, positive number, negative number, rational
Resources:
Curriculum Resources : https://www.uen.org/core/core.do?courseNum=5160#70012

Apply and extend previous understandings of numbers to the system of rational numbers (Standards 6.NS.5-8)	
<p>Standard 6.NS.6: Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.</p> <p>a. Recognize opposite signs of numbers as indicating locations on opposite sides of zero on the number line; recognize that the opposite of the opposite of a number is the number itself. <i>For example, $-(-3) = 3$, and zero is its own opposite.</i></p> <p>b. Understand that the signs of numbers in ordered pairs indicate their location in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.</p> <p>c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.</p>	
Concepts and Skills to Master	
<ul style="list-style-type: none"> Understand the meaning of the term <i>opposite</i> (see 6.NS.6.a) and plot opposites on a number line. Recognize that the opposite of the opposite of a number is the number itself. Understand and position rational numbers on horizontal and vertical number lines. Plot pairs of integers and other rational numbers on the coordinate plane. Plot points in the coordinate plane, recognizing that the signs of numbers in ordered pairs indicate their location in the quadrants. Recognize when ordered pairs are reflections across an axis. <i>For example, (x, y) reflected over the x-axis becomes the point $(x, -y)$.</i> 	
Related Standards: Current Course	Related Standards: Future Courses
6.NS.5 , 6.NS.7 , 6.NS.8 , 6.EE.8 , 6.G.3	7.NS.1 , 8.NS.1 , 8.NS.2 , 8.EE.7c , I.N.Q.1 , I.A.REI.3b , computational skill used in plotting points on a coordinate plane.

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> Use strategies such as counting on, making a ten, decomposing a number leading to a ten, using the relationship between addition and subtraction, and creating equivalent but easier known sums (1.OA.6) Represent whole numbers (2.MD.6), fractions (3.NF.2) and decimals (4.NF.6) on a number line. Compose and understand the first quadrant of the coordinate plane and graph points (5.G.1, 5.G.2)
Academic Vocabulary
Integer, opposite, rational, coordinate plane, ordered pairs, quadrant, reflection (over x -axis or y -axis)
Resources:
Curriculum Resources : https://www.uen.org/core/core.do?courseNum=5160#70012

Apply and extend previous understandings of numbers to the system of rational numbers (Standards 6.NS.5-8)	
<p>Standard 6.NS.7: Understand ordering and absolute value of rational numbers.</p> <p>a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. <i>For example, interpret $-3 > -7$ as a statement that -3 is located to the right of -7 on a number line oriented from left to right.</i></p> <p>b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. <i>For example, write $-3^\circ C > -7^\circ C$ to express the fact that $-3^\circ C$ is warmer than $-7^\circ C$.</i></p> <p>c. Understand the absolute value of a rational number as its distance from zero on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world context. <i>For example, for an account balance of -30 dollars, write $-30 = 30$ to describe the size of the debt in dollars.</i></p> <p>d. Distinguish comparisons of absolute value from statements about order. <i>For example: Recognize that an account balance less than -30 dollars represents a debt greater than 30 dollars.</i></p>	
Concepts and Skills to Master	
<ul style="list-style-type: none"> Order rational numbers on a number line. Compare rational numbers using inequality symbols and justify orally and/or in writing the inequality symbol used. Understand, compare, and interpret rational numbers found in real-world scenarios. Discover absolute value of a rational number as its distance from 0 on the number line. Model absolute value with number lines. Understand that quantities could have a negative value based on the scenario (e.g. debt, sea level, temperature). 	
Related Standards: Current Course	Related Standards: Future Courses
6.NS.6 , 6.EE.5 , 6.EE.8	7.NS.1 , 8.NS.1 , 8.NS.2 , I.N.Q.1 , I.A.REI.3b , I.F.LE.3 , I.F.IF.9 , II.F.IF.9 , III.F.LE.3 , III.F.IF.9 , computational skill used in comparing quantities.

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> Represent whole numbers as lengths from 0 on a number line diagram (2.MD.6) Understand a fraction as a number on the number line; represent fractions on a number line diagram (3.NF.2) Locate decimals on a number line diagram (4.NF.6)
Academic Vocabulary
Absolute value, integer, rational, inequality, magnitude
Resources:
Curriculum Resources : https://www.uen.org/core/core.do?courseNum=5160#70012

Apply and extend previous understandings of numbers to the system of rational numbers (Standards 6.NS.5-8)	
Standard 6.NS.8: Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same x -coordinate or the same y -coordinate.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> Discover how to find the length of a line segment using the coordinates that have the same first coordinate (or second coordinate). Understand that the distance from a point on a coordinate plane to an axis is an absolute value. 	
Related Standards: Current Course	Related Standards: Future Courses
6.NS.6 , 6.NS.7 , 6.G.3	7.NS.1 , 7.RP.2 , plus many standards starting in Grade 8 Mathematics that use the computational skill of graphing points on a coordinate plane.

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> Understand a fraction as a number on the number line; represent fractions on a number line diagram (3.NF.2) Locate decimals on a number line diagram (4.NF.6) Compose and understand the coordinate plane, quadrant 1 only (5.G.1) Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane (5.G.2) Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane (5.OA.3)
Academic Vocabulary
Coordinate plane, coordinate, absolute value, integer
Resources:
Curriculum Resources : https://www.uen.org/core/core.do?courseNum=5160#70012